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EXPERIMENT STATION

BULLETIN LX

GROWTH AND USES OF RAPE

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BULLETIN LX.

GROWTH AND USES OF RAPE.

Rape (*Brassica Campestris*) was at one time extensively grown in Europe for the oil expressed from its seeds. It is now chiefly grown in Britain to provide pasture that will fatten sheep readily. In America, where there is not much of it grown as yet, it is used almost entirely for this purpose, although cattle also are pastured upon it to a limited extent.

The soils which are best adapted to the growth of rape are those of a free-working character. Any soil that is well adapted to the growth of turnips will grow rape readily. It will also grow well on peaty soils rich in humus, and fairly so on clay loams, but the results will not be satisfactory where the attempt is made to grow it on stiff clays. On the humus soils there is also difficulty in getting the seed to germinate properly in dry weather.

The proper place for rape in the rotation is between two crops of grain; and, as is the case with turnips, it may be used as a cleaning crop instead of the bare fallow. As a cleaning crop it is even ahead of turnips, especially when it follows rye grown for the silo, owing, first, to the smothering influence of the rye, and second, to the season at which the ground is plowed and cultivated.

TILLAGE. The preparation of the soil will vary somewhat with the crop preceding the rape. When the rape is not preceded by rye, autumn cultivation, with a view to weed destruction, should follow the removal of the last crop grown; and the spring cultivation, up to the time of sowing the rape, may be the same as that applied to the bare fallow. When rye precedes the rape it should be sown in August if intended for pasture in the autumn and spring following. If intended for fodder or the silo it may be sown early in September, but will sometimes do well when sowed later. In any case not less than two and a-half bushels of seed should be sown. The rye may be cut with the binder when the head begins to come out, and cured in the shock when intended for winter fodder. It should be cut at a later stage when put into the silo. The ground is plowed evenly as soon as the rye is removed. The "skimmer" should be used on the plow, so that all vegetation may be turned under. The plowing after the rye is removed will take place about the end of the first week in June. If the rye has been pastured the ground may be plowed sooner. It may then be harrowed occasionally until the sowing of the rape.

If barnyard manure can be spared for the rape, its application will be followed by a much better crop. It may be applied in the autumn or in the spring when the rape is not preceded by rye. When rye precedes the rape, there will probably not be time to apply farmyard manure after the rye is removed. The aid of artificial fertilizers may then be called in. Two hundred to three hundred pounds of salt and at least one hundred pounds of superphosphate may be sown broadcast before the last harrowing preceding the drilling of the ground for the rape. One hundred pounds of nitrate of soda, or a less quantity, may then be applied about the time of the first cultivating.

SEEDING AND CULTIVATION. The time for sowing the rape in Ontario is a little later than that chosen for sowing turnips, viz., the last week in June. The ground is put into low drills by using the double mould-board plow. These may be from 20 to 25 inches apart, and the seed is sown at once with the turnip drill, which should follow closely after the plow when the weather is dry. The field roller may then also be run over the drills as soon as sown. When rape is sown earlier than the period indicated, its later development is arrested. When it is sown later it is too succulent for very profitable feeding.

The quantity of seed sown is about one pound when sown in drills; if dry weather, more than this quantity should be sown. Three pounds may be sown when scattered broadcast, but when thus sown the cleaning of the land is not effected. The variety in common use is known as the Dwarf Essex. When rape is sown on the bare fallow, to be plowed in as a green crop, from three to five pounds of seed per acre will suffice. It is useful for this purpose.

The cultivation of rape after it has been sown is much the the same as that applied in the case of turnips, with the difference that it is not usual to thin the rape. The horse-hoe may commence to work as soon as the rough-leaf appears, and may be kept going at short intervals until the leaves meet between the rows. If the drills are gone over with the hand-hoes once or twice, all weeds may be prevented from going to seed.

FEEDING. The pasturing of the rape may commence in September. The exact time in the month will depend somewhat on the time of sowing. The pasturing may continue until the time of snow, which is usually in the last half of November.

Any class of sheep or lambs may be pastured upon the rape, but some caution should be used in pasturing breeding ewes upon it, lest they become too fat for breeding in best form. It is especially adapted to the fattening of sheep and lambs which are to be sold for meat. The latter are more frequently pastured upon it than any other form of live stock. Cattle may also be pastured upon it, but they destroy more of it through trampling than sheep. Hence, it is not nearly so much used for fattening cattle.

Sheep, or indeed any class of animals, should never be turned in upon the rape when hungry. They are then liable to eat too much, which may induce bloating, followed in a short time by death, unless relief is given. As scouring is also likely to be induced at first, the sheep should have access to an adjoining grass field and salt at will, and if they are given a small ration of oats per day, not necessarily more than half a pint, it will in some degree counteract the tendency to scour. If they are trimmed with the shears before going on the rape, the injury from scours is reduced.

When the lambs have access to an adjoining pasture, they are less inclined to lie down upon the rape. In times of severe and prolonged frosts, which sometimes happen late in November, the danger from feeding on the rape is increased, and the less mature the rape the greater is the danger. The frozen rape seems to induce various forms of digestive derangement, which sometimes end in death. The cold rain and sleet storms in early autumn are also very injurious to them; hence, sheds should be provided in which they may be sheltered and fed during the time of these cold storms. They may also be fed in these sheds after the rape is all eaten, until the time when they are sold. Where the rape has been drilled, there is also the danger that the lambs will get on their backs when they lie down and so perish; hence, it is well to have them visited and counted morning and evening by an attendant. When the flock is very large, the attendant will find a saddle horse a valuable aid.

Experience with Rape. Our experience with rape on this farm is somewhat limited; but it has been grown by a small number of farmers in the neighborhood of Guelph for several years past. In 1889 we grew 12 acres at this station and fattened lambs upon it. In 1890, 54 acres were grown. For about two months there were pastured upon this rape 17 head of heavy steers and 537 sheep and lambs. One acre of the rape sustained 12 head of lambs for two months. At the end of this time the lambs were ready for sale, and were soon after sold for the Buffalo markets, except 120 head, which were reserved for experimental feeding with a view of shipping them to Britain in the month of May. The sheep and lambs were purchased by Mr. J. E. Story, the farm foreman, in the counties of Carleton and Lanark, in the eastern part of Ontario. The 364 head which were shipped to Buffalo on the 18th of December brought $5.62 per 100 lb. live weight. The gain on each lamb of the lot up to the time of sale, after paying all expenses of purchasing, freight, additional food and attendance, was fully $1.40 per head, that is to say, the food provided by each acre of the rape was worth to us $16.80. The return would have been better had the lambs been a uniformly good lot, which they were not, as it was late in the season before they could be purchased. They were of all shades of color in the face, from pure white to jet black. Some were well bred, but none were pure; some had no breeding. The majority were grades with more or less of improved blood. The well bred lambs gave much the best returns. A large number had long tails, and many were uncastrated. The long-tails are very troublesome in case of scouring, and the neglect of castration is an egregious blunder, as this class of lambs do not feed well, are dull of sale, and can only be sold at a reduced price. Additional particulars regarding the growing of rape and feeding it off are given in the Report of 1890.

COST OF GROWING RAPE. The following is an estimate of the cost of growing an acre of rape based upon our own experience. The estimate is made on the supposition that the rape follows rye, which is our favorite method of growing it here:

One plowing		$2 50
Three harrowings		60
One rolling before sowing		25
Making the drills		75
Drilling in the seed		30
Rolling after sowing		25
Farm-yard manure, 15 tons	$15 00	
Drawing and spreading	4 87	
	$19 87	
One-fifth manure allowed for the rape		3 97
Cultivating four times		2 00
Hand-hoeing twice		1 00
Seed, one pound		15
Total		$11 77

In this computation the sum allowed as charge for man and team is $3 per day, and for man only $1.25 per day. The manure is valued at $1 per load in the barnyard, and it is assumed that 40 per cent. of the manure would be exhausted the first year, of which one-half would be used by the rape. It should also be noted that in damp weather it is not necessary to roll the drills after the seed has been sown. It is assumed that all the labor is hired, both of man and team. The actual cost of the farmer would be much less than the sum indicated.

The rape draws plant-food largely from the air and from the subsoil; and, as it is a gross feeder, it fills the soil with rootlets which improve the mechanical texture and tend to enrich it in their decay. It is also fed off upon the soil, which further tends to the enrichment of the same. It is therefore fair to infer that the land is considerably richer in available plant food after the rape has been fed off than it was before it was grown.

Results. We have then as results the following :

(1) $16.80 as the feeding value of the rape, or a return of $5.03 per acre over the cost of tillage. This sum will vary with the season and the price of mutton.

(2) The thorough cleaning of the land, which is about as effectual as though it had been summer-fallowed.

(3) The value which will be obtained from the increase in the good crops which are grown after the rape. It will be noticed that the value of the rye grown the same season has not been included in the above statement.

General Notes. Rape is not a suitable food for milch cows in the dairy, as when they feed upon it the milk becomes strongly tainted. But it is a good food for pigs, and they are fond of it.

It has been claimed that sheep should be folded upon the rape in order to secure a more even distribution of the manure. We have no experience on this point, but it will probably be found that the sheep will keep healthier when they have more liberty, and are allowed to lie at night upon ground which has a sward upon it.

There is much yet to be learned regarding the growth of rape in Ontario. We have to determine whether flat or drill cultivation is preferable ; whether it will repay the labor of thinning, and if so, to what extent ; and whether food adjuncts may be added while it is being pastured of such a character as to obviate all danger that may arise from digestion while feeding on the rape.

We have carried on various experiments the past two seasons which are referred to more or less briefly in the last annual Report, but no conclusions have as yet been arrived at that may be regarded as definite or final.

There is great room for the extension of the rape industry in Ontario. On the supposition that one acre of rape will fatten 10 lambs, which is a very moderate calculation, if but 100,000 acres of rape were grown yearly we could fatten annually 1,000,000 head of lambs. This acreage would be less than the hundredth part of the arable lands in Ontario.